

WHO-Facts Sheet

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1. MONITORING AIDS TREATMENT BY PHYSICAL SYMPTOMS IS EFFECTIVE

Result is almost as good as therapies based on advanced laboratory tests, a new study finds

When millions of HIV-infected people in poor countries began receiving advanced drug therapies, critics worried that patient care would suffer because few high-tech laboratories were available to guide treatments. But according to a study being published in *The Lancet*, these concerns are as yet unfounded. In fact, the study indicates that when clinicians use simple physical signs of deteriorating health -- such as weight loss or fever -- these doctors can provide therapies almost as effective as those relying on the most advanced laboratory analysis.

"The results of this study should reassure clinicians in Africa and Asia, who are treating literally millions of people without these laboratory tests, that they are not compromising patient safety," said a coauthor of the paper, Dr Charles Gilks, who is the Coordinator of Antiretroviral Treatment (ART) and HIV Care at WHO in Geneva. "In fact, the outcome of their treatment is almost as good as of those patients in the USA and Europe where laboratory-guided treatment is the norm."

The aim of the study was to look at the medium and long-term consequences of different approaches to monitoring antiretroviral therapy in a resource-limited setting: using clinical signs and symptoms alone as recommended in WHO guidelines; or more sophisticated and costly but far less accessible immunological and virological load tests. The scientists used a model that had been tried and tested in London, and shown accurately to predict the course of the epidemic in the UK over 20 years, but with various changes to reflect realities on the ground.

According to the study authors, survival rates for individuals assessed for clinical symptoms alone were almost identical to survival rates for those who underwent laboratory monitoring. The 5-year survival rate was 83% for individuals monitored for viral load, 82% for CD4 (a critical immune component) monitoring, and 82% for clinical monitoring alone. Corresponding values over a 24-year period were 67%, 64% and 64% respectively.

Although the survival rate was slightly higher with viral load monitoring, study authors pointed out it was not the most cost-effective strategy in the poorest countries. The study also examined whether clinical observation alone was effective in determining when to switch patients from WHO-recommended first-line treatments to more costly second-line medicines. Again, diagnosis based on an assessment of clinical symptoms was almost as effective as those relying on expensive laboratory tests.

Study authors concluded that for patients on the WHO first-line regimen of stavudine, lamivudine and nevirapine, the benefits of CD4 count or viral load monitoring were only modest at best.

The study, conducted by a prominent group in the United Kingdom working with WHO scientists, employed mathematical models which were designed to identify emerging problems and problems that might appear after long-term use of ART. But more work must be done. The study is based on mathematical projections and not on real-world patients. While there is little real-world data yet available because these drugs have been used for such a short time in these countries, the little existing information does support the findings. Other studies are ongoing and more results should be available soon.

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2. THE IMPACT OF CLIMATE CHANGE ON HUMAN HEALTH

A Statement by the World Health Organization Director-General

Last year marked a turning point in the debate on climate change. The scientific evidence continues to mount. The climate is changing, the effects are already being felt, and human activities are a principal cause.

In selecting climate change as the theme for this year's World Health Day, WHO aims to turn the attention of policy-makers to some compelling evidence from the health sector. While the reality of climate change can no longer be doubted, the magnitude of consequences, and -- most especially for health -- can still be reduced. Consideration of the health impact of climate change can help political leaders move with appropriate urgency.

The core concern is succinctly stated: climate change endangers health in fundamental ways. The warming of the planet will be gradual, but the effects of extreme weather events -- more storms, floods, droughts and heatwaves -- will be abrupt and acutely felt. Both trends can affect some of the most fundamental determinants of health: air, water, food, shelter, and freedom from disease.

Although climate change is a global phenomenon, its consequences will not be evenly distributed. Scientists agree that developing countries and small island nations will be the first and hardest hit.

WHO has identified five major health consequences of climate change:

First, the agricultural sector is extremely sensitive to climate variability. Rising temperatures and more frequent droughts and floods can compromise food security. Increases in malnutrition are expected to be especially severe in countries where large populations depend on rain-fed subsistence farming. Malnutrition, much of it caused by periodic droughts, is already responsible for an estimated 3.5 million deaths each year.

Second, more frequent extreme weather events mean more potential deaths and injuries caused by storms and floods. In addition, flooding can be followed by outbreaks of diseases, such as cholera, especially when water and sanitation services

are damaged or destroyed. Storms and floods are already among the most frequent and deadly forms of natural disasters.

Third, both scarcities of water, which is essential for hygiene, and excess water due to more frequent and torrential rainfall will increase the burden of diarrhoeal disease, which is spread through contaminated food and water. Diarrhoeal disease is already the second leading infectious cause of childhood mortality and accounts for a total of approximately 1.8 million deaths each year.

Fourth, heatwaves, especially in urban "heat islands", can directly increase morbidity and mortality, mainly in elderly people with cardiovascular or respiratory disease. Apart from heatwaves, higher temperatures can increase ground-level ozone and hasten the onset of the pollen season, contributing to asthma attacks.

Finally, changing temperatures and patterns of rainfall are expected to alter the geographical distribution of insect vectors that spread infectious diseases. Of these diseases, malaria and dengue are of greatest public health concern.

In short, climate change can affect problems that are already huge, largely concentrated in the developing world, and difficult to combat.

Only, better systems for surveillance and forecasting, and stronger basic health services, can offer health protection. Citizens, too, need to be fully informed of the health issues. In the end, it is their concerns that can spur policy-makers to take the right actions, urgently.

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3. CLIMATE CHANGE WILL ERODE THE FOUNDATIONS OF HEALTH

WHO Director-General warns vulnerable populations at greatest risk of projected impacts

Scientists tell us that the evidence the Earth is warming is "unequivocal." Increases in global average air and sea temperature, ice melting and rising global sea levels all help us understand and prepare for the coming challenges. In addition to these observed changes, climate-sensitive impacts on human health are occurring today. They are attacking the pillars of public health. And they are providing a glimpse of the challenges public health will have to confront on a large scale, Dr Margaret Chan, Director-General of the World Health Organization (WHO), warned on the occasion of World Health Day^[1].

"The core concern is succinctly stated: climate change endangers human health," said Dr Chan. "The warming of the planet will be gradual, but the effects of extreme weather events -- more storms, floods, droughts and heatwaves -- will be abrupt and acutely felt. Both trends can affect some of the most fundamental determinants of health: air, water, food, shelter and freedom from disease".

Human beings are already exposed to the effects of climate-sensitive diseases and these diseases today kill millions. They include malnutrition, which causes over 3.5 million deaths per year, diarrhoeal diseases, which kill over 1.8 million, and malaria, which kills almost 1 million.

Examples already provide us with images of the future:

- **European heat wave 2003:** Estimates suggest that approximately 70,000 more people died in that summer than would have been expected.
- **Rift Valley Fever in Africa:** Major outbreaks are usually associated with rains, which are expected to become more frequent as the climate changes.
- **Hurricane Katrina, 2005:** Over 1800 died and thousands more were displaced. Additionally, health facilities throughout the region were destroyed critically affecting health infrastructure.
- **Malaria in the East African Highlands:** In the last 30 years, warmer temperatures have also created more favourable conditions for mosquito populations in the region and therefore for transmission of malaria.
- **Epidemics of cholera in Bangladesh:** They are closely linked to flooding and unsafe water.

These trends and events cannot be attributed solely to climate change but they are the types of challenges we expect to become more frequent and intense with climate changes. They will further strain health resources which, in many regions, are already under severe stress.

"Although climate change is a global phenomenon, its consequences will not be evenly distributed," said Dr Chan. "In short, climate change can affect problems that are already huge, largely concentrated in the developing world, and difficult to control."

To address the health effects of climate change, WHO is coordinating and supporting research and assessment on the most effective measures to protect health from climate change, particularly for vulnerable populations such as women and children in developing countries, and is advising Member States on the necessary adaptive changes to their health systems to protect their populations.

WHO and its partners -- including the UN Environment Programme, the Food and Agriculture

Organization, and the UN World Meteorological Organization -- are devising a workplan and research agenda to get better estimates of the scale and nature of health vulnerability and to identify strategies and tools for health protection. WHO recognizes the urgent need to support countries in devising ways to cope. Better systems for surveillance and forecasting, and stronger basic health services, can offer health protection. WHO will be working closely with its Member States in coming years to develop effective means of adapting to a changing climate and reducing its effects on human health.

"Through its own actions and its support to Member States," said Dr Chan, "WHO is committed to do everything it can to ensure all is done to protect human health from climate change."

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4. WHO REPORTS HIGHEST RATES OF DRUG-RESISTANT TUBERCULOSIS TO DATE

Multidrug-resistant tuberculosis (MDR-TB) has been recorded at the highest rates ever, according to a new World Health Organization (WHO) report that presents findings from the largest survey to date on the scale of drug resistance in tuberculosis.

The report, Anti-Tuberculosis Drug Resistance in the World, is based on information collected between 2002 and 2006 on 90,000 TB patients in 81 countries. It also found that extensively drug-resistant tuberculosis (XDR-TB), a virtually untreatable form of the respiratory disease, has been recorded in 45 countries.

The report also found a link between HIV infection and MDR-TB. Surveys in Latvia and Donetsk, Ukraine found nearly twice the level of MDR-TB among TB patients living with HIV compared with TB patients without HIV.

Based on analysis of the survey data, WHO estimates there are nearly half a million new cases of MDR-TB--about 5% of the total nine million new TB cases--worldwide each year. The highest rate was recorded in Baku, the capital of Azerbaijan, where nearly a quarter of all new TB cases (22.3%) were reported as multidrug-resistant. Proportions of MDR-TB among new TB cases were 19.4% in Moldova, 16% in Donetsk in Ukraine, 15% in Tomsk Oblast in the Russian Federation and 14.8%

in Tashkent in Uzbekistan. These rates surpass the highest levels of drug resistance published in the last WHO report in 2004. Surveys in China also suggest that MDR-TB is widespread in that country.

"TB drug resistance needs a frontal assault. If countries and the international community fail to address it aggressively now we will lose this battle," said Dr Mario Raviglione, Director of the WHO Stop TB Department. "In addition to specifically confronting drug-resistant TB and saving lives, programmes world-wide must immediately improve their performance in diagnosing all TB cases rapidly and treating them until cured, which is the best way to prevent the development of drug resistance."

For the first time, the global survey includes analysis of XDR-TB. However, because few countries are equipped at present to diagnose it, limited data were available for this report.

Although the report highlights the extent of drug resistance, it also points to some successes. Thirteen years ago, Estonia and Latvia were singled out by WHO as drug-resistant TB "hotspots". Today, following a substantial investment and a sustained assault on MDR-TB, rates in these two Baltic countries are stabilizing and TB case notification rates are falling.

The true scale of the problem also remains unknown in some pockets of the world. Only six countries in Africa—the region with the highest incidence of TB in the world***—were able to provide drug resistance data for the report. Other countries in the region could not conduct surveys because they lack the equipment and trained personnel needed to identify drug-resistant TB. "Without these data, it is difficult to estimate the true burden and trends of MDR-TB and XDR-TB in the region. It is likely there are outbreaks of drug resistance going unnoticed and undetected," said WHO TB expert Abigail Wright, the principal author of the report.

WHO estimates that US\$4.8 billion is needed for overall TB control in low- and middle-income countries in 2008, with US\$1 billion for MDR-TB and XDR-TB. But there is a total financing gap of \$2.5 billion, including a US\$ 500 million gap for MDR-TB and XDR-TB.

"The threat created by TB drug resistance demands that we fill these gaps, as laid out in the Global Plan to Stop TB, a roadmap for halving TB prevalence and deaths compared with 1990 levels by 2015," said Dr Marcos Espinal, Executive Secretary of the Stop TB Partnership. "The Plan also calls for another imperative—sufficient resources for research to find new diagnostics, new drugs effective against resistant strains and an effective TB vaccine."

Important Note:

* The bacteria responsible for TB become resistant when people ill with TB are not provided with or do not complete a full course of medication. Drug-resistant TB, like drug-sensitive TB, can also be transmitted through the air from an infected person to a non-infected person. MDR-TB is a form of TB that does not respond to the standard six month treatment using first line-drugs (i.e. resistant to isoniazid and rifampicin). It can take two years to treat with drugs that are 100 times more expensive than first-line treatment.

** XDR-TB is a form of TB caused by bacteria resistant to virtually all the most effective anti-TB drugs (i.e. MDR-TB plus resistance to any fluoroquinolones and any one of the second-line anti-TB injectable drugs: amikacin, kanamycin or capreomycin).

*** In sub-Saharan Africa HIV / AIDS is dramatically fuelling the spread of TB. TB is a major cause of death among people living with HIV. MDR-TB and XDR-TB are highly lethal in people living with HIV -- studies show case fatality rates of over 90%. Drug-resistant TB is therefore a major threat to the effectiveness of both TB treatment and anti-retroviral treatment programs.

Worldwide Efforts to Confront Tuberculosis are Making Progress, but Too Slowly:

The World Health Organization (WHO) report, *Global Tuberculosis Control 2008*, released in March 2008, finds that the pace of the progress to control the tuberculosis (TB) epidemic slowed slightly in 2006, the most recent year for which data were available. The new information documents a slowdown in progress on diagnosing people with TB. Between 2001 to 2005, the average rate at which new TB cases were detected was increasing by 6% per year; but between 2005 and 2006 that rate of increase was cut in half, to 3%.

The reason for this slowing of progress is that some national programmes that were making rapid strides during the last five years have been unable to continue at the same pace in 2006. Moreover, in most African countries there has been no increase in the detection of TB cases through national programmes. Other studies have also shown that many patients are treated by private care providers, and by non-governmental, faith-based and community organizations, thus escaping detection by the public programmes.

"We've entered a new era," said Dr Margaret Chan, WHO Director-General. "To make progress, firstly public programmes must be further strengthened. Secondly, we need to fully tap the potential of other service providers. Enlisting

these other providers, working in partnership with national programmes, will markedly increase diagnosis and treatment for people in need". The twelfth annual WHO report on global TB control, is based on data given to WHO by 202 countries and territories.

There were 9.2 million new cases of TB in 2006, including 700,000 cases among people living with HIV, and 500,000 cases of multi-drug resistant TB (MDR-TB). An estimated 1.5 million people died from TB in 2006. In addition, another 200,000 people with HIV died from HIV-associated TB.

The report highlighted two aspects of the epidemic that could further slow progress on TB. The first is multidrug-resistant tuberculosis (MDR-TB), reported by WHO last month to have reached the highest levels ever recorded. To date, however, the response to this epidemic has been inadequate. Given limited laboratory and treatment capacity, countries project they will provide treatment only to an estimated 10% of people with MDR-TB worldwide in 2008.

The second threat to continued progress is the lethal combination of TB and HIV, which is fuelling the TB epidemic in many parts of the world, especially Africa. Although TB/HIV remains a massive challenge, some countries are making strides against the co-epidemic. Almost 700 000 TB patients were tested for HIV in 2006, up from 22 000 in 2002—a sign of progress but still far from the 2006 target of 1.6 million set by the Global Plan to Stop TB 2006-2015.

"The report tells us that we are far from providing universal access to high-quality prevention, diagnostic, treatment and care services for HIV and TB," said Dr Peter Piot, Executive Director of UNAIDS. "Clear progress has been made but we must all do more to make a joint approach to reducing TB deaths among people with HIV a reality."

The report also documents a shortage in funding. Despite an increase in resources, especially from the Global Fund and some middle-income countries, TB budgets are projected to remain flat in 2008 in almost all of the countries most heavily burdened by the disease. Ninety countries in which 91% of the world's TB cases occur provided complete financial data for the Report. To meet the 2008 targets of the Global Plan to Stop TB, the funding shortfall for these 90 countries is about US\$ 1 billion.

"We look forward to working with all partners to further assist countries to achieve TB targets for 2015 and beyond," said Dr Michel Kazatchkine, Executive Director of the Global Fund to Fight AIDS, Tuberculosis and Malaria. "Together we are bringing hope to the individuals and communities suffering from the enormous burden of TB."

In recognition of World TB Day, Dr Jorge Sampaio, former President of Portugal and the UN Secretary-General's Special Envoy to Stop TB, called for enhanced leadership to address TB/HIV. "TB is a leading cause of death among people living with HIV/AIDS," he said. "Several countries have shown that targets relating to TB/HIV are achievable and have put in place measures that will have an impact on the lives of those at most risk. But this is a restless battle. We still need to do much more and much better."

Change in WHO classification of causes of death:

This year, under new guidelines, deaths from a combination of HIV and TB are no longer classified as TB deaths.

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5. MONITORING AIDS TREATMENT BY REGULAR PHYSICAL EXAMINATION IS NEARLY AS EFFECTIVE AS ADVANCED LABORATORY TESTS

When millions of HIV-infected people in poor countries began receiving advanced drug therapies, critics worried that patient care would suffer because few high tech laboratories were available to guide treatments. But according to a study being published in *Lancet* Friday, 25 April, these concerns are as yet unfounded. In fact, the study indicates that when clinicians use simple physical signs of deteriorating health -- such as weight loss or fever -- these doctors can provide therapies almost as effective those relying on the most advanced laboratory analysis.

"The results of this study should reassure clinicians in Africa and Asia, who are treating literally millions of people without these laboratory tests, that they are not compromising patient safety," said a coauthor of the paper, Dr Charles Gilks, the Coordinator of Antiretroviral Treatment (ART) and HIV Care at the World Health Organization in Geneva. "In fact, the outcome of their treatment is almost as good as those patients in the USA and Europe where laboratory-guided treatment is the norm."

The aim of the study was to look at the medium and long-term consequences of different approaches to monitoring antiretroviral therapy in a resource limited setting: using clinical signs and symptoms alone as recommended in WHO guidelines; or more sophisticated and costly but far less accessible

immunological and virological load tests. The scientists used a model that had been tried and tested in London, and shown accurately to predict the course of the epidemic in the UK over twenty years, but with various changes to reflect realities on the ground.

According to the study authors, survival rates for individuals assessed for clinical symptoms alone were almost identical to those who underwent laboratory monitoring. The 5-year survival rate was 83% for individuals monitored for viral load, 82% for CD4 (a critical immune component) monitoring, and 82% for clinical monitoring alone. Corresponding values over a 24-year period were 67%, 64% and 64% respectively.

Although the survival rate was slightly higher with viral load monitoring, study authors pointed out it was not the most cost-effective strategy in the poorest countries. The study also examined whether clinical observation alone was effective in determining when to switch patients from WHO-recommended first-line treatments to more costly second-line medicines. Again, diagnosis based on an assessment of clinical symptoms was almost as effective as those relying on expensive laboratory tests.

Study authors concluded that, for patients on the WHO first-line regimen of stavudine, lamivudine and nevirapine, the benefits of CD4 count or viral load monitoring were only modest at best.

The study, by a prominent group in the United Kingdom working with WHO scientists, employs mathematical models which were designed to identify emerging problems and problems that might appear after long term use of ART. But more work must be done. The study is based on mathematical projections and not on real world patients. While there is little real world data yet available, because these drugs have been used for such a short time in these countries, the little existing information does support the findings. Other studies are ongoing and more results should be available soon.

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